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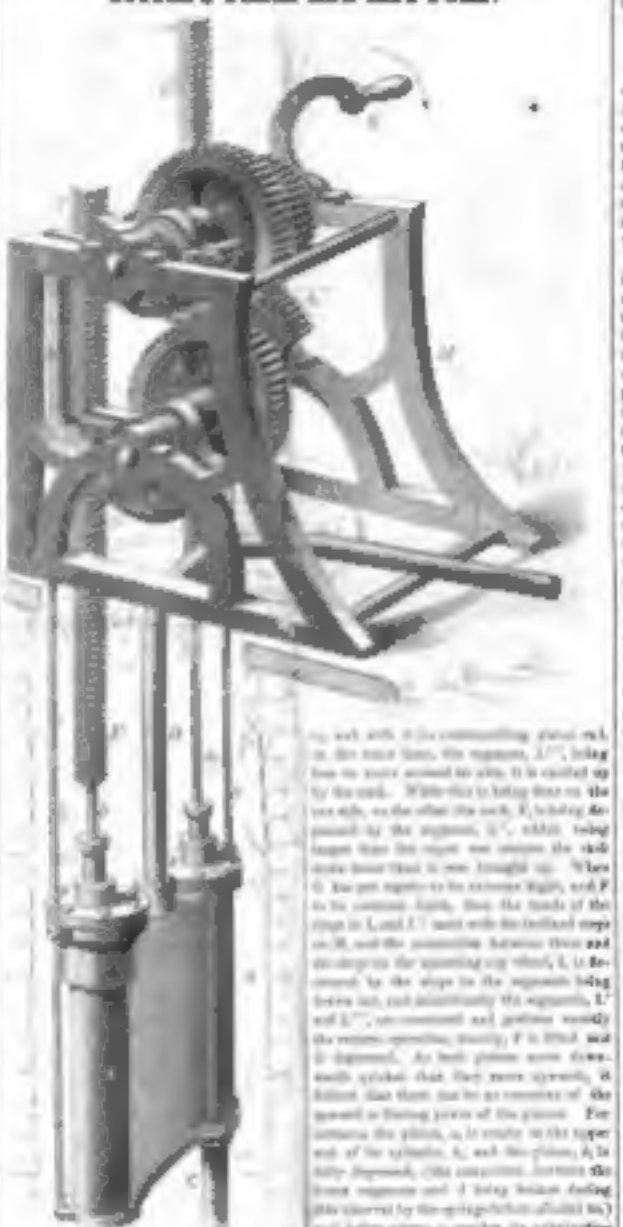
Iron Ferules.

We have as very many specimens of this article sent to our office with the request that we will tell the makers what it is, (many of them mistaking it for gold,) that we cannot do better than to explain the peculiarities of it, so that any person finding it may know it value, which is, comparatively speaking, nothing. It has a yellow golden appearance, due to the sulphur which it contains, and sometimes the small amount of copper present. It always occurs in a crystalline form, as cubes or double pyramids, and when cut with a knife it will be found hard, and will only cut off in one direction—that parallel to the faces of the crystal; it is very brittle, and breaks unevenly, having a dull fibrous fracture. If it is heated, it smells strongly of sulphur, and is not at all malleable. All these characteristics show at once that it is not gold; and we would advise all those who find anything which they think is the precious metal to try these simple experiments, and if it answers the above description they need not trouble themselves any further about it. These hints are the more necessary, as it is a very common mineral, and often deceives the unwary.

Improved Force and Lift Pump.

The improvements which are to be found in this pump are intended to supply a constant and equal stream of water in every position of the pistons, and this is effected by giving the pistons a quicker motion downward than when moving upward. The engraving represents the pump in the well with the mechanism by which it is worked on the top.

A and B are two pump cylinders connected by a water passage, C, and having pistons provided with valves opening upward. The water being drawn into A through the induction pipe, E, is passed through a small opening in the top of A into the water passage, C, and from that through another opening at the bottom into B, from which it passes to the situation or delivery pipe, D. Each of the piston rods, a and b, has a rack, F and G, attached to it. On the top of the well is placed a frame, H, having two axles or shafts working one below the other, bearing upon it, and those carry each of them a permanent cog wheel, I and J. A handle, K, is fixed to the top axle, by which the pump is operated. The upper axle also carries two segment wheels, L and L', which are free to move around it, and each of these has a small stop or piece passing through it, kept projecting a little beyond the inner surface of L by the springs, l' l''. The cog wheel, I, gears into J, which has also a stop, j, pressed by an inclined plane, (which forms a stop to prevent the piston falling by its gravity,) and small space at its surface; and the lower arbor being placed a little more distant from the rocks between segments, L'' and L''', of larger radius than the upper ones; in other respects they are exactly similar. Upon the frame, H, are placed four inclined steps in such a position as to meet the back of the stops, l', and force them out by their heads connected with the springs. Two of these are connected together as seen at M.



SUTTON'S FORCE AND LIFT PUMP.

The operation of the machine is as follows: When the handle, K, is rotated in the direction shown by the arrow, the cog wheels, I and J, are turned, and by means of the stop on L and l on L, the segment L is turned round, simultaneously elevating the rod, [illegible] and with it the corresponding piston rod; at the same time, the segment, L''', being free to move around its axis, it is carried up by the rack. While this is being done on the one side, on the other the rack, b, is being depressed by the segment, L''', which being longer than the upper one causes the rack to move down that it was brought up. When G has got again to its extreme right, and F to its extreme left, then the heads of the stops in L and L' meet with the inclined steps on M, and the connection between them and the stops on the opposite cog wheel, I, is disconnected by the steps in the segments being drawn out, and consequently the segments, L' and L''', are continued and pushed exactly the reverse operation, namely, F is lifted and G depressed. As both pistons move downwards (which they move upwards, it follows that there can be no resistance of the upward or lifting power of the pistons. For instance the piston, a, is under in the upper end of the cylinder, A, and the piston, b, is fully depressed, (the connection between the lower segments and J being broken during this interval by the springs before alluded to,) and before giving a motion to corresponding point, the piston b will extend so that there will always be a lifting power. In consequence of this, there is no clutter of the valves, as the water never falls back on them, but is continually being drawn and forced forward. This pump is especially intended for mining purposes, where a large quantity of water is to be raised, or in any situation where it is desirable to raise water from a great depth or to a great height. The pump may be suspended from the frame at any desirable depth by the rods, S. It requires no air or vacuum chamber, as the stream is constant.

This pump is the invention of Noah Sutton, 333 Chatham street, New York, who will be happy to furnish any further information. It was patented Nov. 3, 1857.

Electric Telegraphing by steam.

The London Times describes a method for sending telegraph messages by steam power. All the telegraphs in use are operated by hand, either by keys like those of the piano, as in the House telegraph, or by one key, as in the Morse telegraph. The change proposed to be effected over the common slow method is stated to be a recent invention of H. Bagge, of London, and is, as we learn, described by the Times as follows:—

"A series of gutta percha bands, about six inches wide, and a quarter of an inch thick, are coiled up about as drums arranged for the purpose. These bands are studded down both sides with a single row of holes at short intervals apart. When a message is to be sent, the clerks insert in the holes small brass pins, which, according to their combinations in two or three, (with blank holes between,) represent certain words or letters. In this manner the message is "set up" in the bands with great rapidity, and connected with ordinary steam machinery, by which they are drawn in regular order with the utmost rapidity, between the charged poles of an electrical machine in such a manner that, during the moments if each pin's passing, it forms electrical communication between the instrument and the telegraph, and a signal is transmitted to the other end of the wire, where the spark perforates a paper and records the message. The only limit to the rapidity of the operation is the rate at which the bands can be drawn, since the electrical contact of each pin, even for the 1000th part of a second, is more than sufficient to transmit a mark or signal from Great Britain and register it in America."

Old friends frequently appear with new faces, and this really appears to be the case with the above described telegraph. Excepting the use of brass pins in the holes of the bands, to hook and close the circuit and for setting up the messages, the invention is, in every feature, the same as the telegraph illustrated and described on page 178, Vol. III, Scientific American. This telegraph had holes in the bands, the same as the one described above, but no brass pins; the holes formed the connection for closing the circuit, and according to their position they caused dots, spaces, and dashes—as in the Morse telegraph—to be recorded. It was a telegraph as capable of being operated by a steam engine as that of the above-named gentleman, who appears to us to have begged another person's invention.

Statue to Jenner.

A subscription is being raised in France for the purpose of erecting a statue to the memory of the celebrated Dr. Jenner, who, it will be remembered, discovered that vaccination was a preventive of the smallpox. The most eminent physicians and surgeons of Paris are on the committee, and are working hard for their noble project. We hope they may be successful, as Jenner's discovery has done more than perhaps any other for the alleviation of one of the most direful "ills that flesh is heir to."

A Large Plane.—A plank of redwood was exhibited at Philadelphia lately, which was about twelve feet long, six feet six inches wide, and two inches thick. It was perfectly "clear," with the exception of a small spot, not amounting to a knot, in one corner.

Patent Claims

[illegible] Cutting Sheet Metal. [illegible] of Jersey City, assignor to [illegible] of New York City: I claim the spiral shank, the [illegible], and friction device, [illegible] substantially and as already set forth.

[illegible] Hubbard and S. Richardson, of [illegible], Mass.: I do not claim a rotary wheel harrow, nor do I claim the [illegible] of a weight to the draft bar so as to [illegible] on the side of the rotary wheel harrow, [illegible] [illegible] [illegible] as shown in the patent [illegible] of the United States Patent.

But I claim a rotary wheel harrow so made with the [illegible] shaft [illegible] of the wheel, as specified, [illegible] of the wheel may be [illegible].

And, with a wheel made [illegible] as specified, I claim a [illegible] [illegible] the weight to be adjusted nearer to or farther from the center of the wheel, and with other means to the adjustable one as stated.

[illegible] F. [illegible], assignor to himself and [illegible], Mass.: I claim the described [illegible] machine for [illegible] [illegible] as set forth for the purpose specified.

[illegible] I claim the method described of [illegible] [illegible] in the machine, and removal [illegible] as described and set forth.

[illegible] Ruben of [illegible], assignor to himself and [illegible] of New York: I do not claim the manufacture of [illegible] as made by [illegible] [illegible].

But I claim the improved manufacture of [illegible] [illegible] as made by [illegible] and [illegible] a [illegible] wheel, and subsequently twisting it into the [illegible] as specified.

REISSUE.

[illegible] Watson, [illegible] Patent, [illegible], and [illegible] of New York City. Patented Jan. [illegible] [illegible] for [illegible] [illegible] [illegible] of the blades, as described.

Wine Manufacture and Adulteration.

Wine is the oldest of stimulating beverages; when pure, it is both healthy and nutritious. Even as far back as the time of the antediluvian patriarch, Noah, its very valuable qualities were tested. The two principal wine-producing countries in the world are Austria (particularly Hungary) and France. The whole quantity of wine produced yearly in all Europe is stated to be 120 millions of eimers, or 2,400 millions of gallons (one eimer being equal to twenty gallons). Of this quantity Austria and France together produce 100 million eimers, and the rest of Europe 20 millions. In good years Austria produces more than France; but generally France produces more than Austria. The consumption of wine increases every year, but its production (in a natural way) does not keep pace with the demand. It has been found by experience that thirty-three years in every century are years of failure for the wine-dresser, and only ten in every hundred are years of plenty. We may therefore imagine to what extent adulteration is carried. To illustrate this, we may mention that in the last two years less port wine has been produced in Portugal by about 60 per cent than was exported, and there was about 20 per cent more port wine consumed in England than was imported, making a total of 80 per cent spurious wine.

The most lucrative and easiest of adulterations is to convert water into wine, or to mix water with wine. Port wine is manufactured in England by adding water to very strong Cape wine, and a new fermentation is caused by yeast. Coloring substances and etheric oils are added to imitate the flavor. The same method is pursued to manufacture French and Spanish wines; raisins and currants are sometimes used, and even plums and beet-root have been discovered in spurious wines.

As the sun shines on the wicked with as much brightness as on the good, so chemistry has enabled many to adulterate, at the same time that it has taught how these adulterations may be detected; and, although, at present, we do not understand the combinations of the alcohols and ethers with essential oils, yet the time will surely come when we shall, and even to-day the experiments of the laboratory have produced from cream of tartar, sugar and fruits, seemingly good and wholesome wines. Some improvements must occasionally be made by the wine-seller, because nature does not produce every year—even on the same soil—wine of the same flavor and strength; and the wine-dealer therefore resorts to such means as will produce wine of an equable flavor. There is in Switzerland and the south of Germany a mode of wine-improving which is called "galling the wines." There is no harm in this process, as it consists in adding lime or alumina to take off a little sourness, and in applying the white of eggs or isinglass or milk to purify it, as all these substances precipitate; but if lime or alkalies are added when the wine contains decomposing it is harmful to the health, as chemical combinations are then formed in solutions which are unhealthy. French wines are sometimes adulterated with alum or even sulphuric acid to improve the color. The adulterations most common are those for improving color and flavor; the former is effected by Brazil and Campeachy wood, litmus, or elders, and the latter by nitric acetic ether.

It is a fact that, even at the present time, wines are manufactured without fresh grapes; raisins being steeped in rain or pure water, and admixtures of various kinds of wines—red or white—being added to cause fermentation. These are less objectionable than the bad apples and pears and the slops of potatoes sometimes used in making artificial wines.

Chemistry has hitherto failed to find reagents to detect such adulterations, except cider which is detected by the presence of malic acid. The only successful detection lies in the hand of an able chemist in the quantity of solid matter in wines, as there is a constancy in the quantity of solid matter in the various kinds of wines. It is only true of the natural unadulterated wine that it is "the milk the old age," a source of health, and the nectar to which the Greeks ascribed the power of imparting eternal youth and immortality to their gods.

L. E. [illegible].

[If we would discourage adulteration, we should patronize home-grown wines rather than foreign; that is, if we drink any at all. There is no doubt that America may ultimately become a great wine-growing country, if encouragement is given to her wine-dressers, and as illustrations of this assertion, we need only mention California and Ohio, two States in which fine clear wines have already been produced. Next week we shall have something to say about home adulterations of this beverage.

Fixing Back-lash in Flouring Mills.

Messrs. Editors—One of the greatest difficulties in the practical working of steam flouring mills is what is termed "back-lashing," or in other words, the millstones, by their momentum, are carried faster than the driving gear, while the engine passes its centers, and being overtaken again, a jar is produced, also a strain on the machinery, which prevents the proper grinding of the grain, besides causing serious damage to the machinery. Many contrivances have been introduced to obviate this, such as double engines, springs, &c., but without much success. There is, however, a way of avoiding it entirely, and of securing a motion as uniform as can be desired. The principle is known in theory to all good millwrights and engineers, but in nine cases out of ten they fail to bring it out in practice. All that is necessary, is to have the fly-wheel sufficiently large and heavy, that its momentum shall exceed that of all the stones combined. No allowance should be made for the resistance of the grain under the stones, as it will sometimes happen that the feed may be shut off by accident, and the stones, being relieved from that resistance, their momentum will increase, and breakage of machinery result. I am operating a mill which is so nicely calculated in this respect that when supplied with the usual feed, a very uniform motion is obtained; but it has happened on two occasions that the supply of grain to the stones was interrupted by straws, which produced such severe back-lashing that our main driving-shaft was broken in both instances. The momentum of the fly-wheel should exceed that of the stones combined, when running light, by at least one-fifth. For this reason, engines for flouring mills should be of short stroke, to make a greater number of revolutions per minute. This will enable millers to get up the required momentum in the fly-wheel without having it inconveniently large, and it will avoid the necessity of giving too much velocity to the stones.

S.

Magnetic Variations.

Messrs. Editors—I saw in a late number of your valuable paper an article headed "Magnetic Variations," from which I infer that Mr. Samuel E. Jack, of Maryland, was somewhat surprised to find that from actual observation, the magnetic variation at his place differed materially from that given in Mr. Loomis' "Magnetic Chart of the United States."

Now, I do not know how perfect a chart Mr. Loomis may have been able to make of the magnetic variations of the United States, but fifteen years' experience has taught me that there is absolutely very little dependence to be placed upon the magnetic needle. I have no confidence in any chart of to-day that pretends to give me the magnetic variation on the same meridian to-morrow, next week, or next year. Such are the variety of causes of magnetic variation that we are not certain of its remaining the same, even for an hour at a time, on the same meridian, much less if the needle is transferred to another meridian, no more than a mile from the first. Heat and cold, the different electrical states of the atmosphere, and the different ores in which the earth abounds, all have their effect upon a good magnetic needle. Nor do we often find two needles that will indicate precisely the same variation at the same time and on the same meridian. I have two excellent needles, and they differ to the amount of 20′.

From a series of observations which I have been making at this place since the 1st of May, 1857, I find that the average variation of the same needle, at 7 o'clock A. M., has been 3° 30′ E.; at 12 M., 3° 48′ E.; and at 5 P. M., 3° 41′ E. I find also that in the whole number of days on which observations were made, there were not more than one-fourth in which the variation stood the same all day. In some instances the variation increased 20′ between morning and noon.

Such has been my experience, and such, I think, will be every man's that puts the matter to the same test. It is easily seen, therefore, how little dependence is to be placed upon the needle in making any very important survey.

C. S. [illegible].

Michigan City, Ind., Jan. 18, 1858.

German Newspapers.

Messrs. Editors—Your paper of January 16th, contained an article stating that "there are ten times as many newspapers printed in the German language in the United States as there are in Germany." In reply to, and refutation of this, allow me to refer you to a statement translated from the Leipzig *Illustrirte Zeitung* (a paper that is, in every way, reliable,) of August 21, 1857, which says:—

"In 1856, there were regularly published in Germany 1,266 newspapers devoted to politics and news, 191 to theology, 43 to philology, 63 to law, 60 to general literature, 60 to history, 90 to medicine, 75 to natural science, 173 to agriculture, 129 to commerce and mechanics, 38 to modern literature, 21 for children, and 212 of miscellaneous contents."

This shows that there are 2,461 newspapers printed in Germany, while, according to a recent statement of one of the western German papers, the whole number of German papers, periodicals, &c., published in the United States is 136. In addition to the above figures, two circumstances should be considered; in the first place, the heavy stamp-duty demanded by the government in Germany on all periodical publications, makes them very expensive, in comparison to the same in this country, where they cost nothing but the actual expense of printing, &c.; and in the second place, a very large proportion of the population in Germany consists of people whose earnings are so small that the expense of a newspaper would be a large item; and it is, therefore, usual there for two or three, and even as many as six or eight families, to club together, and take one newspaper or other periodical between them, reading it by turns, according to arrangement made; while many are dependent for their news on the papers found at the restaurants, beer-houses, or public reading-rooms.

J. Gosser.

Pittsburg, Pa., February, 1858.

[The item to which our correspondent refers was taken from the miscellaneous column of one of our leading daily papers. We do not know where the responsibility of the miscalculation rests, but we are pleased to receive and publish the facts as set forth in the above letter. They are, no doubt, correct.

A Cup of Bitters.

Thoughtless people would have the world made up of sweets; they would expunge bitter substances as useless. When, however, we look into nature's laboratory, we see that bitters have not been made in vain. The consumption of bitter substances by the human family is so great that it can only be compared to the demand for sweets. Bitter substances, like sweets, can be extracted from a great variety of plants growing in different parts of the earth. The purest bitter principle is yielded by the quassia tree, so called after a negro named Quassi, who used it with remarkable success in curing a malignant fever which prevailed at Surinam. Nearly all the bitter plants are called *febrifuge*, from their power to cure fever. It is not, however, in ill health that bitters are solely used, but in ordinary beverages, which are not absolutely essential to support life. The principal bitter used in England is well-known to be derived from the hop plant; in Germany it is from wormwood; in Italy it is from absinth. In the latter country we see men smoking their cigars, and if leisurely conversing they drink "bottled absinth," which, to an English palate, is so bitter as to be perfectly nauseous. In the Levant they eat a sort of gourd, so bitter as—[illegible]. Some of the Biblical interpreters think that this is the plant spoken of in the Second Book of Kings, Chap. IV, ver. 38-41, on tasting which for the first time, the people exclaimed to Elisha "there is death in the pot," but on being mixed with meal there was "no harm in it." In Scotland they dry and chew the roots of the bitter vetch; these roots are also put into their whiskey. The bitter vetch is reputed to have the power of allaying hunger and thirst for a lengthened period; but in London the "evening topers" drink bitters in the morning to stimulate the appetite. There are a great many other bitter plants used in various parts of the world. In Sweden the marsh [illegible], or wild rosemary, takes the place of the hop; and in North America they have a plant called *Labrador tea*, which affords a more bitter infusion than the China tea used in England. Among the other numerous bitters we must not forget the chamomile, the bitter of which is said to be the only remedy for nightmare. Mustards, turnip-tops, and many other things are included among the bitter food which we eat and relish. It is not a little remarkable that young people have a dislike to anything that is bitter, while elderly persons generally prefer bitter things. This is just as it should be; for as life advances, our spiritual self would seem to require a sort of grease to the wheel—a tonic to the body; and this is well supplied by bitters.

Sapientia Prudens.

Calcareous Rocks.

These are composed of carbonate of lime, and are called by various names according to their state of aggregation. In marbles and Iceland spar, it occurs in crystals; in fine limestone, it is compact; and in chalk almost pulverulent. The colors of calcareous rocks are even more various than their structures. Iceland spar is perfectly transparent; pure marble and chalk are white, whilst other varieties of this substance present colors differing according to the nature of the organic or inorganic substances by which they are stained.

New Inventions.

Circle of the Scientific Press.

This interesting society has held its weekly meetings in Paris with great regularity, and has devoted much of its time to the discussion of the plan for tunneling the Straits of Dover, which it has decided can be done. Photography has also received a share of its attentions; and some highly interesting papers on the heating qualities of coke when mixed with anthracite, have been read by M. Tunlier, to which we shall call more especial attention on a future occasion.

Polychromatography.

This is the name given to a new branch of art recently brought to great perfection by an Italian named Marastri, in Paris. It consists in simply cutting out sheets of black paper in such a way as to make it into a picture, which has all the finish of an engraving. The production of landscapes was first attempted by this method by a German named Schmidt; but Marastri is stated to produce views equal to those of the best artists employing brush and pencil.

Machines Wanted.

First. A machine capable of carding and spinning wool, for the use of a family of moderate size, to be run by means of a crank turned by hand, or by any other cheap power, and of such size as would be convenient for a farmer to have in his house. Second, A machine to do the knitting of a family.

A. W. C.

[There are knitting machines in use of the character referred to by our correspondent, but none for carding and spinning, so far as we have. We have an idea that such one could easily be made, and would be of great advantage to many families. We submit ingenious to devote considerable attention to the invention of neat portable machines, whereby every farmer's family may be enabled to make their own cloth—carding, spinning, and weaving—in a separate manner to the clumsy machines and processes whereby home made fabrics are now manufactured.—Eds.

Automatic Field Gate.

The trouble of opening gates is one of the great inconveniences experienced in riding or driving in the country, and even the ostman, sitting on his post, has a decided objection to getting down and opening the gate, that his horse and cart may pass through. Every one, more or less, has felt this trouble, and in consequence self-opening and closing gates have been invented to supply the want.

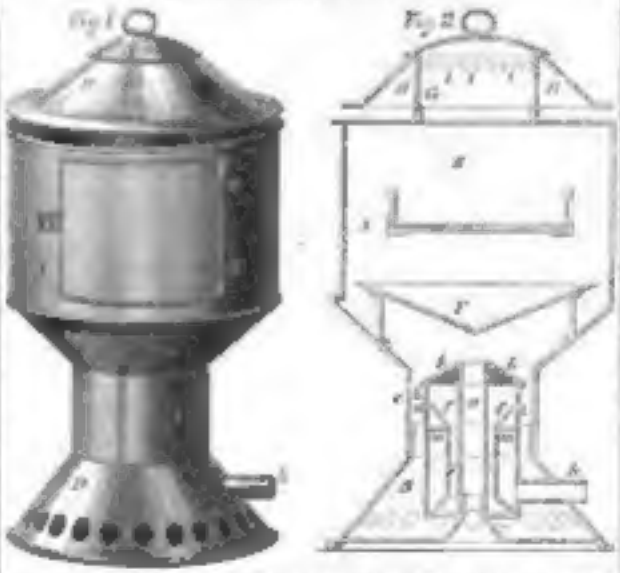
The gate shown in our engraving is one of the most recent, and possesses some novelty. Fig. 1 is a perspective view of the gate and approach, in which A represents the post, from which the gate is swung, and B the post against which it closes. C is the gate, which has a catch kept closed by the spring, G, and to open the gate it is requisite that the catch be pulled back against the spring, the tendency of which is to keep it out. The gate is hung from a bar, E, provided with a small pulley, e, at the bottom, and another, e', on the top. Around this, and fastened by one end to it, are wound the spiral springs, F, both passing and connected with opposite sides of the gate at f. D and D' are two posts, each having a latch, against which the gate stops when opened. H H' H'' H''' are cranks in the ground, over which the wheels of the carriage part, and their weight pressing the cranks down, the gate is opened. Suppose a carriage to be advancing to the gate from the foreground of the engraving; the wheels pass over H', and pressing it down, cause the pulley at its extremity to perform a greater revolution; this operates the cords, c, which being connected with c, wind up the spring, F, and at the same time pulling back the catch, the gate is released, and the force of F carries it round to D'; the passage is now clear, and the carriage wheel passes over H''', the crank on which is connected by the rod, J, to c, and this turning c again, the catch is released, and the spring wound up in a reverse direction, and the gate flies back to the post, B. If a carriage be coming the other way, the reverse takes place, H''' or H'' being first pressed down, and the gate flies to D. Should the person wishing the gate opened be on horseback or on foot, it might be somewhat difficult to cause the foot to tread in exactly the right place, so another contrivance is added. On the top of D and D' are horse containing small pulleys, k, and over these, cords, g, connected with c', and having at their ends balls or weights, i, depending. k passes alternately from either side of the gate, one, by pulling one of these weights, causes the gate to open, and by doing the same when through, the gate will close behind him, there being an assembly that he should forward it on horseback.

SMART'S AUTOMATIC FIELD GATE.

The great novelty consists in the employment and combination of the spring and crank and rod, so that when the crank is drawn back, the spring contains at the same time sufficient power to open the gate in either direction. Fig. 2 is a plan view.

It is the invention of C. W. Smart, of Watertown, N. Y., who will give any information that may be desired. It was patented December 28, 1857.

MIRAN'S PATENT GAS STOVE.



Among the numberless applications of coal, and other gas to the comforts and use of man, there is not one capable to gas as a heater. It is so cleanly, so easily lighted, so cheap, and gives so much warmth, that any device for radiating all the heat given out in combustion must be acceptable.

The stove which is represented in our illustrations (of which Fig. 1 is a perspective view, and Fig. 2 a section,) is intended for this purpose, and its peculiar features we will now describe. In the perspective view, only the external parts are seen, which are: B, a cylindrical casing base, perforated with holes to admit the amount of external air necessary for the combustion of the gas; A, a pipe that admits the gas; K, the body of the stove, having a door, and G, a more or less closed cover. In the section, Fig. 2, it will be seen that the gas, entering at A, passes into the burner, E, situated in the portion, C, of the stove; after surrounding the burner, it passes through the diaphragm, a, and becomes regulated in its supply, and then meeting the deflecting plate, f, it meets with the air drawn up through c, and becomes perfectly mixed; this mixture is burned with an excess of air through the rose, d, or the wire gauze case, b, surrounding all round, from the outer case, d, of the burner, E, to the central tube. By this method of combustion all the heat is obtained and no smoke produced, and the heat, striking against the deflecting plate, f, passes all around the tray, (shown in Fig. 2,) on which anything may be baked, thus making an oven of the stove, and passing up G through the holes, i, and down into the room, after having done its service, through the space between H and K.

This gas stove is the invention of Patrick Miran, of Boston, Mass., who will furnish further information. Patented July 7, 1857.

French Flouring Mills.

Until recently, French flouring mills were of the most rude and clumsy construction—very much like the American mills of the past century. Lately very great improvements have been made in France in such mills, and in some arrangements they are perhaps in advance of us.

M. Darblay, as stated in a foreign correspondence, has recently erected a mill driven by a turbine wheel under a very high fall, which operates five pairs of stones and all the attendant machinery, such as separators, elevators, &c. The turbine is placed in the basement of the mill, and its main shaft extends upwards through all the floors to the top story. All the stones are driven from this shaft by direct action, and the ancillary machines with belting. In most of the great mills in France the stones are now driven by belting; those in England are mostly driven by gearing; while in America some are driven by direct action from turbines, others by gearing, and others again by belting. We have been informed that the method of driving stones by gearing is the most expensive for first cost, but the most economical in the long run. The gearing, if well made, and the shafting well arranged, is more steady in its operation, and requires fewer repairs than belting or direct action arrangements.

The Narrative of 1857.

The past year has taken with it many bright spirits from the fields of science, among whom may be mentioned Hugh Miller, Dr. Kane, Dr. Ure, Dr. Dunglison and Redfield, the meteorologist, General Havelock, in India, General Cavaignac, of France, and Marshal Radetzky, of Austria, are among the leaders who have fallen before the universal conqueror, while the deaths of Thomas Crawford and Christian Rauch have left gaps in the art world that will not easily be filled up. Literature has been deprived of Bancroft the poet, Douglas Jerrold the satirist, Dr. Dick the Christian philosopher, Dr. Grimold the critic, and Mr. Gliddon the antiquarian. Truly, the world has suffered by the extraction of so many gems of genius; but we have no doubt that others will be raised up to fill their vacant places.

Clipper Ships.

This class of fast-sailing vessels which were called into popular existence by the discovery of gold in California, in order to make quick passages, have become somewhat unpopular with their owners. It is stated that very few of them pay expenses. The great number of sailors required to work them, their great original cost, and small amount of room for cargo, are greater drawbacks in a pecuniary way than all the advantages obtained from making fast voyages. All the new ships which have recently been built are of greater carrying capacity than the greatest clipper ships built four or five years ago.

Scientific American.

NEW YORK, FEBRUARY 19, 1859.

Railroads in the Patent Laws.

A telegram to the associated press of this city announces:—"The patent bills recently introduced by Messrs. Taylor, of New York, and Chaffee, of Massachusetts, and which were referred to the Committee on Patents, have been harmonized by those gentlemen and will probably be reported to the House at an early day. The bill agreed upon proposes several important changes. It makes the Office independent, increases the fees to meet the increased expenses; creates a Board of Examiners-in-Chief, in order to secure uniformity in granting Letters Patent; gives an appeal to the Chief Commissioner, and makes his decision final; limits the time in which an interference can be made to two years, after which time it accepts the parties to go into Chancery to take proof regularly in court, to test the right of the parties; removes the restriction on foreigners, and makes all persons equal, without regard to citizenship; allows no withdrawals, no additional improvements, no disclaimers, and no caveats; it compels the attendance of witnesses as in civil suits, and authorizes magistrates in all the States to take testimony. The design of the bill is to restrain the indiscriminate issue of patents, and at the same time protect inventors and the rights of the people."

Upon a perusal of the points embraced in the above, they will strike our readers as essential and important reforms—such as have been repeatedly urged on the attention of Congress through the columns of the SCIENTIFIC AMERICAN; and were it not for the closing paragraph, which attracts our notice, we should not at this time occupy ourselves in discussing reforms in the patent laws.

We have been aware for some time past, that a patent bill, embodying a clause to restrict the Commissioner in the free performance of his duties, has been in process of cooking; and although, like the frog in the sugar-coated pill, the dodge does not fully appear in the brief synopsis of the bill which we publish above, yet we were assured by high authority that the bill of Mr. Taylor had this object fully in view. We do not intend to discuss, at present, in detail, the merits of this proposed bill. We prefer to wait until it is duly printed. Our particular object now is to call attention to the "dodge of the bill," as set forth in the above paragraph, viz. "to restrain the indiscriminate issue of patents." If we did not know, by an experience of many years, that the above paragraph contained a gross libel on the practice of the Patent Office, we might suspect that our system was little better than those existing in some European States, which allow patents for everything, "good, bad, and indifferent," without a preliminary examination. Every intelligent person who has had business with the United States Patent Office—every patent attorney—every inventor—knows (and many of them by sad experience) that a system of "indiscriminate issue" does not exist, and has not existed since 1836, in which time our patent system was thoroughly overhauled and repaired. The public may depend upon it that there is a "snake in the grass," which had better be pulled with a stick before the hand is thrust in and thereby bitten.

There are a few old fogy patentees who have become rich, and wish to be made richer at public expense, whose principal business seems to be to hang about Washington during the sessions of Congress, "lobbying" and clubbing together to carry out their two selfish ends, wholly in disregard of the rights of others. This class constitutes a powerful "lobby," and is generally able to indemnify itself from some unjust member of Congress, who will undertake the disagreeable job of their terrible scrapes. No other persons ever suffered like these men—they have been harassed by litigation—private lives ruined thereby; and if we could gather all the sighs of their persecutions and sufferings, we should be impressed with the conviction that no class of Christian martyrs ever underwent equal pain and torture.

If we may believe newspaper reports, a new element has recently appeared to join hands with this suffering band of patent (not patriot) martyrs. Some Canadians, all of a sudden, have been seized with a holy horror, because Commissioner Holt has appointed four out of their number as Appeal Board of apparently sympathizing, liberal men, who sometimes reverse the previous decisions of the other Examiners; and these latter, therefore, are crying "mad dog," "worthless patents," &c., and are terribly afflicted with the horrid thought that the country will be deluged with these useless parchments. We wish not to be misunderstood on this point. We have confidence in most of the Examiners now in the Patent Office; they are worthy men, and no doubt endeavor to examine a proper judgment in all cases brought to their consideration. It is nevertheless true, however, that some of the older Examiners (the Office is newly clear of them now) have suffered their views to contract very much in judging questions of novelty, and there can be no doubt whatever that many cases are wrongfully rejected; hence the necessity of a liberal Appeal Board, which is the language of the Commissioner, will "kindly and cautiously lift from the inventor his erroneous preventable fetters."

The two elements combined in this scheme to limit the functions of the Commissioner, by inspiring him of the power to select a Board favorable to the benevolent working of such a system as, in his judgment, will best subserve the interests of which he is the appointed guardian, will work to eliminate gold; and we hope that Congress will not lend its authority to objects or in any manner interfere with its judicious development.

African Emigration.

In looking at a map of the African continent one is immediately struck with its impolitic-ness, that is to say, as few places are marked upon it, and all the central portion is described as an "unexplored region," and in casting the eye over it, the word "desert" is frequently seen. From this, and many other causes, mostly traditional, the world has been in the habit of regarding the central portion of Africa as a gigantic waste of sand, on which a temperature was ever shining, and where the only beings that ever visited were the plains was the deadly simoon or simoon. Gradually, but slowly, these ideas have been being gainsaid, and the reading and inquiring portion of the community here and in Great Britain have been anxious to know more about the portion of our globe, of which their pre-conceived notions were so very crude.

Mungo Park, James Bruce, and Gordon Cumming have all told such marvelous tales of rich plains and verdant hills, rivers and inland seas, that people have put them down as, at best, romancers; but at last the time has come when all their accounts of beauty and fertility are corroborated, and the idea of African deserts has resolved, in a great measure, to dwell-like, from the gentlemen whose travels are now before the world: one of these, Dr. Livingstone, a missionary, and the other Dr. Barth, a medical man, who was sent out, we believe, by the British government, to make an official report of his discoveries and researches. The former gentleman has chiefly explored Western Africa, and has discovered a vast inland sea (Lake Ngami). Generally he found the land rich and fertile, and the inhabitants hospitable, but not too much given to the arts of peace. In nearly the whole district through which the above two years, he has been travelling, the inhabitants were pagans. Dr. Livingstone's book contains much valuable and interesting information, and is full of exciting incidents, and pleasant details of the manners and customs of the tribes who entertained him; but it is to Dr. Barth's travels in North and Central Africa that we must turn for practical information. He tells us that there is uninterrupted water communication from the Bay of Biafra to the great Lake Tsad, (or, as it is spelt on the maps, Tchad,) by means of the rivers Benue and Kwara. The banks of both of these rivers are lined with villages inhabited by peaceful and industrious natives, who sell cotton, tobacco, and negro cloth; there is some amongst an ornament in their clay-built houses, and altogether they are in a far more advanced state of civilization than is generally supposed. The country is extremely beautiful, fertile, and well-watered, and in every way suited to the production of those plants which require a warm sun. The general description of all travelers has been: "Beautiful plains, well-wooded slopes, park-like scenery," and other expressions of similar import. As a climate, Africa is proved to be rich, not barren; fertile, not sterile; and all that she wants to develop her resources is the improving hand of the white man, to teach her present owners the arts of civilization.

We should not be surprised if, in less than fifty years, steamboats were plying on her rivers, and trucks were being laid for railways, for there is little doubt that now her resources have been made known, it will not be long before some enterprising Yankee goes off to find applications for them; and remember who it may be, we shall with every pleasure, from whatever he starts, who goes to spread civilization among the wild tribes of the desert, or more peaceful denizens of the plain, a most hearty and earnest "Success be with you!"

Special Legislation on Patents.

"The House Committee on Patents have reported a bill extending for seven years the patent of David Boyd for his type-casting machine, and a bill extending for a like term Wm. Crompton's patent for an improvement in figure or fancy power looms."

The above significant paragraph we find under the telegraphic news of our daily papers of the 9th inst. The work of the Patent Committee in Congress has evidently commenced in earnest, and although the real cause on which they have reported are not as specially interesting to the community at large as many cases which the Committee have under advisement, they clearly indicate the sentiments of the Committee, and their acts in these two cases foreshadow what may be expected hereafter.

The object, in one, to the system of extending patents by special legislation so long as we have a Patent Office with a good code of laws which are ample for the protection of every inventor, and we believe the Committees in both Houses of Congress would do the public a benefit by reporting adversely on every case presented to their attention. The Patent Office is the place to go to get patents extended as well as granted, and every applicant who can show that he is entitled to prosecute for a period beyond the 14 years for which his patent is originally granted, can enjoy his privileges for seven years longer by complying with the statutes and conforming to the rules of the Patent Office in filing his testimony.

But the men of them, and perhaps no one might in truth state that all those who are asking Congress to legislate on their patents, have either had the benefit of the seven years' extension by the Patent Office, and already enjoyed a monopoly of their invention for 21 years, or else have so failed to bring the eyes of the Commissioner by their statements at the time of asking for the extensions, that he could see that they had been already well remunerated, and that were not entitled to further protection. The public may be assured that almost every applicant's patent has passed through one or the other of these phases.

The Crompton patent—the case might is to be remarked—was originally patented Nov. 28, 1837, and in 1851 it was extended by the Patent Office for seven years to Edwin Prescott, or corporation, making 21 years the patent has been in existence.

The patent on which Mr. Bruce seeks an extension was granted in November, 1842, but for some reason unfilled, it seems, legal it extended by the Patent Office, and consequently it expired in November, 1857, since which period it has been public property. He now asks Congress to issue to him a new patent; for so long as the original patent has expired, it of course cannot be revived, and there is not no way in which he can get his dead patent into existence, unless Congress instructs the Commissioner of Patents to grant to Mr. Bruce a new patent.

That Congress has the power to extend patents after the patentee or owner has had the benefit of the full protection afforded by the statutes which regulate the issue and duration of patents is a question which we do not propose to discuss at present. But it is our opinion that whenever a patent has expired and the invention thus becomes public property, our courts would not sustain the renewed patent on constitutional grounds. It seems to us to be a species of special legislation not sanctioned either by right or justice, as it takes rights from the public to which they are entitled and confers them upon an individual.

Mercuric Colors.

Urine cold, when dissolved in dilute nitric acid and exposed to heat until it becomes dry, assumes a deep red appearance, and when treated with ammonia afterwards, is changed into a rich purple color, forming the "purpurate of ammonia," or murexid. It is the richest in the form of beautiful crystals, which appear of a deep red color by transmitted and a green color by reflected light. The murexid is soluble in water, alcohol, and ether, and produces beautiful dyes on various fabrics. More than thousand, some years since, its application to the coloring of silk was immediately suggested, but it was not until very lately that this could be done in such a manner as to make the color even moderately permanent; it was almost as fugitive when exposed to sunlight as the yellow stains of turmeric, which are about as fleeting as a shadow.

To fix the purpurate colors on silk, a solution of it is mixed with another of corrosive sublimate in a bath; on the silk being immersed in the liquor, it soon assumes the rich purple shade, the depth and tone of which depends on the amount of murexid and corrosive sublimate used. A weak solution produces lilac shades; strong solutions, deep purple shades. This method of fixing the murexid is stated to be a recent discovery of M. Depouilly, a practical chemist in Paris.

These purpurate colors are also applicable to wool, and have been in use for some years in Germany, where chemistry is studied more thoroughly than in any other part of the world. The process for coloring wool is different from that of silk. All the dirt and grease being first removed, the wool is handled for half an hour in a warm bath, somewhat strong, of the murexid, and then dried in the open air. After this it is put through a second bath, at a heat of 160° Fah., containing corrosive sublimate and acetate of soda, in quantities of 2 ounces of sublimate and 6 ounces of the acetate to every 25 gallons of water. In about twenty minutes a beautiful purple color is obtained on the wool. A little oxalic acid is generally added to the first murexid bath. Cotton is colored in a strong solution of the murexid and chloride of lead. Corrosive sublimate and the acetate of soda are also used on the fixing agents in a finishing warm bath. The color can be printed on the white ground of calicos by making up the paste in the proportions of 10 oz. of murexide and 10 oz. of nitrate of lead to 30 oz. of water—thickening with gum to the proper consistency for print-

ing. After the color is printed off the goods, they are passed quickly through a light box, stated to 1000 Fah., containing superheated gas. The colors of preparers of ammonia has thickened are stated to be very beautiful.

All bodies—those on goods, fruits and leaves—are not reluminous, as some suppose, but merely the reflection of light caused by the peculiar forms of the objects which reflect them. All the colors of the rainbow are reflected by a drop of water, yet the water is colorless. It is the same with a prism of glass or rock crystal, which is transparent and white of itself. Some have supposed that a science might be built up by which the constituents of substances could be determined by their colors, but this is an impossibility. There are black and white diamonds, and the red iron assumes red, yellow, and blue tints by simple exposure to different degrees of heat. The colors on goods—such as silk, cotton, and wool—are due to exceedingly minute crystals precipitated in their pores or cells by chemical affinity or electrical action.

Thaumaturgy.

A correspondent of W. Shakespeare writing to us from Kirksville, Mo., says:—

"I feel that the inhabitants of Missouri scribe to the moon great influence, whereas the people in the New England States, as a general thing, regard it as mere superstition. For instance, throw two pieces of board upon grass, one during the light of the moon, and the other during its darkness; and at the end of six weeks the grass under the one will be dead, while that under the other will be green. Again, build two parallel pieces of fence during the light and dark of the moon; and at the end of a year, one will be found to have perceptibly settled, whereas the other will have remained as when it was built. Again, by laying two courses of shingles during the light and dark of the moon, the one course will warp, while the other will remain level. The Missourians say this is not a theory to be supported by argument, but a sufficient fact. I request you to solve the question 'Does the moon exercise any such influence upon the earth.'"

The correspondent is correct in his views regarding the growth for establishing the moon's influence. It is not argument, but fact, by which such a theory can be supported or overthrown. We can easily conceive how the moon's rays may exercise a chemical influence on those bodies upon which they fall, but why, after a considerable period of time, they should cause a fence to shift that was built during the light of the moon, and yet affect another erected during the dark of the moon, surpasses our comprehension, and we believe that such is not the case, although it may be a belief by Missouri, and other portions of the country. If it is the light of the moon which exercises such an influence, it appears to us that the fences referred to should be affected, but in different proportions. That exposed for one year to the light of twelve moons should exhibit an effect one-twelfth greater than the one exposed to that of eleven moons more, and so less; and the same results should be exhibited with the two courses of shingles.

We believe that the moon does exercise some influence on vegetation, and other objects, but at the same time we are positive that many wrong notions are afloat regarding the nature and extent of such influences. Those farmers who sow their seed, plant their potatoes, put up their hives, and shingle their houses under the direction of Mrs. Moon, are undoubtedly deeply tinged with superstitious notions. We have seen it demonstrated in practice, that those farmers who pay no attention to the moon's periods in sowing, planting, or reaping, raise as good crops as those who are strong believers in lunar "entrapments," or the magic influence of the moon.

It is an established fact, we believe, that cook meat or fish putrifies much sooner by appears to the mouth says that it would if kept under cover; this is due to the chemical influence of such light. This opinion, however, is opposed to that of Arago and Sir Lardner, in their work on popular astronomy. They state that the reputed most putrifies means, but say "it is owing to its being more cooled by radiation, than causing it to imbibe moisture, which is a source of decomposition to animal bodies."

The theory of these philosophers is undoubtedly incorrect, because they have all entered no proof regarding the supposed moist imbibing moisture, nor if it did, that this is the cause of its more rapid decomposition. Their theory is also based (and they have so stated it) upon the supposition that the moon's rays possess no chemical influence whatever, whereas we now know that Luna can take her own picture to the sensitive sheet of the photographer—thus demonstrating the chemical power of her light.

A common and popular opinion—and is to us an old ladies notion—is, that when the crescent of the new moon appears to position as if a pocket-knife could be hung upon it, warm weather may be expected to follow. To this belief's superstitious notion or not, it has some foundation in fact, as has been proven by many observations, and never more conclusively than during the past month of cold weather, when the rim dish of the new moon appeared as if repairing on a crescent of silver.

Natural Oil Springs.

In some localities of our country, oil is obtained like water. In one place it is found bubbling from the hill-side; in another by boring deep through hard rock; and in another, saturating the soil, like water in the marsh. Some of these oil springs were known to the aborigines before the first of white men had pressed the brown lying in the dark forest, and the oil itself had been used by them for medicinal purposes, such as for removing pains, by applying it externally. For the same purpose it is now much employed by all classes of our people; and in some sections of the country it affords the means of artificial light and lubrication.

At Tarentum, Allegheny county, Pa., a clear and beautiful oil is obtained, which is found, in nearly every feature, to be the best refined coal oils; and it is used without any refining process just as it comes from the bosom of the earth, for burning fluid and the lubricating machinery. In a sample of it sent us by Messrs. Irvin and Peterson, of the above place, there are asphaltic paraffine and a trace of nitrogen, thus showing that it is of the same nature as the oils now produced by distilling bituminous coals and shales at comparatively low temperatures. In relation to the source of this oil, those gentlemen, in their letter to us, say:—

"The bridge of the numerous wells in this vicinity pass unchecking the gas-bubbles of rock fully of coal immediately beneath the surface. A question now arises as to where our supply of oil comes from. Four reasons naturally, in elucidation of this subject, (page 139) are verified by our practical experience."

Some small seams of coal are found at Tarentum by boring; the salt water at a depth of 800 feet; and, strange to relate, a vein of fresh water impregnated with carbureted hydrogen 400 feet below the salt, or 1,200 feet deep.

We have also received a letter on the same subject, but relating to a different oil source, from J. N. Hoff, of West Court-house, Va., in which he describes the petroleum oil springs in that neighborhood. They were first discovered by an old hunter named Swinney, in Hughes' river, near its junction with the Little Kanawha. This oil is found at a very short distance below the surface of the ground, and extends in a horizontal bed about one mile along the river running west, and back, north and south, for about fifteen miles. It has astounding a stratum of coarse sand six feet deep, and from every square of ten square feet about ten barrels of oil may be secured. Immediately above the oil bed, there is a thin stratum of the sand, through which the oil does not flow, and above this there are a few feet of soil. The well and mode now resorted to obtain the oil, and a puddle is then formed, by throwing water into the sand, and puddling it with a spade or hoe. It is then allowed to settle, after which the oil in front floating on the top of the water, is lifted with ladles, and afterwards barreled up and sold at prices varying from 25 to 40 cents per gallon. There is a blowing salt well in the vicinity, which also forms an excellent, pure quantities of very pure oil daily.

The oil requirements are Hughes' river is somewhat different in its characteristics from that at Tarentum, but the oil is both is undoubtedly the product of distillation from carboniferous deposits by subterranean heat. There are a series of rock and beds under the oil; at a depth of only 180 feet there is a vein of coarse coal 27 feet in thickness. One correspondent states that in all probability this oil is of recent formation, or rather that it is being formed till the time from the carboniferous mass of coal. The bearing out of large quantities of it in the salt well would go to substantiate this opinion. This region is rich in iron, coal, and other minerals, all of easy approach, and capable of being worked at a small cost. It is probable that at some future day, not very far distant, it will afford an important field for industrial effort and enterprise.

American Uses of Coals.

There are some witnesses in the use of which we have not made much progress, partly from the fact that other materials have been discovered to supply their place, and partly from the erroneous belief prevailing such palpable peculiarities that its earliest discoverers must have seen at once for what it was most applicable. This is the case with coals. The ferocious wood is an odor to put into their nests, and keeps its full moisture, and they take on that is not employed as coupons of all trade. The old inventors lined the walls of their houses with coals, because it kept them warm and prevented dampness; and lastly, the Egyptians manufactured coffins of it, which, being lined with a cohesive composition, preserved their dead from decay. The method employed by Pettigrew of cutting the back and burning the coal, is the same to-day as it was six thousand years ago; at that adoption, we cannot say that we have done very much with that but will have done before. It is quite time that we made a more and discovered some new uses and appliances for this cheap and plentiful material.

Shipping Notices.

The Line of the Atlantic.—The inauguration of the steam mail and passenger line to the British Provinces and Portland, Me., has been attended with the most complete success, the first trip having been made in the unusually short time of 18 hours. The steamer is a new and splendid vessel, named the Great Eastern, and has been built by Mr. Lewis Cook, and will ply between Portland and Boston. The Great Eastern is a fine vessel, and is well adapted for the business in which she is engaged. She is 200 feet long, 30 feet beam, and 12 feet deep, and will carry 1,000 passengers, and will be run by the Great Eastern Company, which has the contract for carrying the mails, and is under the management of Mr. Cook, who has had many years experience in the business of steamboating on the Atlantic coast. The office of the Company is at No. 3 Central Wharf, Boston, and at No. 1 Long Wharf, New York, where all information may be obtained.

Steam and Steam Engineering.—We have received the first number of a work under the above title, published by Messrs. Van Nostrand, Reinhold & Co., 117 Fulton street, New York, and for sale by Clarke & Peterson, 19 Chestnut street, Philadelphia, Whitehead & Co., 111 Market street, Pittsburgh, and booksellers generally throughout the country. It is devoted to the practical and theoretical consideration of steam and the steam engine, and is intended for the use of engineers, firemen, and others who have charge of steam engines and boilers, and for students who are preparing themselves for the duties of those positions. It is the most complete work of the kind we have seen, and will be found very useful to all interested in steam engineering.

Hunter's Magazine.—Published by Hunter, Cleaveland & Co., New York. This magazine for February contains several excellent articles, one on "Poetry as an Index," and another on the "Tomb of the Scottish Bishops," by M. M. Whitcomb, editor of The Pacific Commercial Advertiser, together with all the literature and miscellaneous matter of the past month.

Southern Literary Journal.—C. H. Dodd, Nashville, Tenn.—The object of this journal is pronounced by the highest authorities, and it should be the ambition of every man in the Union who is proud of his country, and wishes to keep it so, to aid it. This Southern work, by advocating literature, thereby aids the Union, which primarily gives birth to the existence of the country and protects it in the enjoyment of the most perfect liberty.

Correspondents

S. W. S., of Ga.—Gin makers should not be well acquainted with any views respecting "perpetual motion"—they are fallacies. It would be a natural query, and answer our principles, to notice every absurd story about such machines being discovered, and as the aim is to establish no affair, described in the Journal of Inventions. Our great object is to consult new, practical, and useful information.

T. S. C., of Md.—There are but very few buildings erected with hollow walls. Plaster may be put on hollow brick walls without lathing, but not on solid walls, unless they are very dark. Common mortared pipes through the walls will remove the danger to crack off. We prefer lathing all brick walls for plastering. We believe there is no difference in the durability of the kind of brick used.

L. D. W., of Ohio.—The idea of constructing railroads under ground is not new. They have been tried in England for some years, but are no easy of construction as we do them. A better plan of travelling for weight of a train is said to be equally as strong.

F. M. W., of C. W.—There are a number of good mechanical reading books out, but when is the best to be had is not known.

M. Neff, of Mich.—There are numerous models in the Patent Office of steam engineers to support the views of the claim of the inventor, but many of these models are so much out of order as to be useless.

James O'Gary will please to forward us such his Post-office address, and we will write to him in regard to his invention. We receive no correspondence to be published in this paper, or in other columns for us to answer unless we so address.

C. C. E., of Texas.—We have received no numerical orders from you within the past six months, so far as we can recollect.

G. H., of Cal.—You cannot get a secret for making an article of paper similar which has hitherto been made of wood. The substitution of one with known materials for another by the ingenuity of an artist, is not the legitimate subject of a patent. We cannot answer your inquiries concerning the cost of steam engine power, or the cost of manufacturing paper stocks. The price of 20 manufacturer's work is $1 per annum, and is not sold in subscription. We have credited you $2.50 in full, for subscription.

C. C., of Pa.—A. A. Townsend, 511 Water street, City, who sells lumber and superintends sales. These matters can be attended without much expense to the inventor by the intervention of an agent, in not the legitimate subject of a patent. We cannot answer your inquiries concerning the cost of steam engine power, or the cost of manufacturing paper stocks. The price of 20 manufacturer's work is $1 per annum, and is not sold in subscription. We have credited you $2.50 in full, for subscription.

J. H., of Ill.—Your plan for propelling balloons by the use of light gaseous steam escaping from a pipe at the rear end of the apparatus, upon the partial exciting principle, is certainly good, and if you make it operate, you can, no doubt, obtain a patent.

J. T., of N. Y.—You should make your wife subscribe from contents your living board; but if you are really dissatisfied at which points of separation use a certain wash of lime, ounces of washed lime and half an ounce of sulphuric acid; take a pint with water, and applied to the soil in a working. Let it stop on for 24 minutes, then wash it off, and apply a light sand coating. Two or three applications will make the hair fall out for ever. You can also purchase depilatory powders in any perfumery store.

J. P., of N. Y.—It appears to us that you ought to lengthen you have this second proposed motion. The second is moving a horizontally one to every back into a position the other used to drive a wheel, and that circle the same water into the wheel continually. But how are you going to carry it out? You seem to regard it as a kind of [illegible] wheel, although it will take more power to make the water suspended in moving the wheel, than you can obtain from it acting on the wheel. Motions are objections.

S. L. F. & Co., of Pa.—Power is weight, or pressure multiplied into velocity. The only way you can find out the power of the fore stroke on the valve by the indicator, one to which our refer, is to multiply the weight of the water into its velocity; this will give you the amount of the power. You have neither given us the weight of the water nor the speed with which it was moving.

H. F. B., of N. J.—Water tape is obtained at Messrs. Isaac Lake, St. Lawrence co., N. Y.; at Lockport, N. Y.; at the Falls in the White Mountains, N. H., and at Troy, Vt. We do not understand what he says.

J. W. G., of Pa.—Copy is furnished to read by a stroke of sides of glue to the other material that the plank of wood are cemented together.

L. F. S., of N. Y.—Friction matches are for sale at hardware, drug, plastic and fancy stores, by dealers, their trade are taxed, by dipping them first in melted sulphur, and afterwards in a paste composed of 10 parts, by weight, of gum arabic, 5 of phosphorus, 10 of nitre, 10 of sugar and enough water, and a little red lead of sufficient.

D. S., of Ill.—For the best thing a gentleman's suit made of best woollen is required. It is most preferable to make the suit of wool.

H. G., of Cal.—If you wish our opinion in regard to the patentable quality of your steam plow, you must furnish us with a model and description of it. We do not comprehend your plan from the written description.

E. L., of Conn.—We have seen hundreds of times before, and the water of which passes through the

IMPORTANT TO INVENTORS.

The laws which govern the motion of bodies are capable of many pleasing illustrations, and the examples which we now give of curious rotary motion is very interesting and easily performed. Take a piece of card and cut out a little figure like that in the engraving and paste or gum it in an erect position on the inside of a watch-glass, A. Then procure a black lacquered waiter, B, or a clean plate will do, and holding it in an inclined position, place the figure and watch-glass on it, and they will of course slide down. Next let fall a drop of water on the waiter, place the watch

glass on it, and again incline the waiter, and instead of the watch-glass sliding down, it will begin to revolve. It will continue to revolve with increasing velocity, obeying the inclination and position of the plane, as directed by the hand of the experimentalist. The reason of this is, in the first place, in consequence of the adhesion of the water to the two surfaces, a new force is introduced by which an unequal degree of resistance is imparted to different parts of the watch-glass in contact with the waiter, and consequently, in its effort to slide down, it revolves. Again, if the drop of water be observed, it will be seen that it undergoes a change of figure; a film of water by capillary action, is drawn to the foremost portion of the glass, while by the centrifugal force, a body of water is thrown under the kinder part of it. The effect of both these actions is to accelerate the motion, or in other words, to gradually increase the speed.

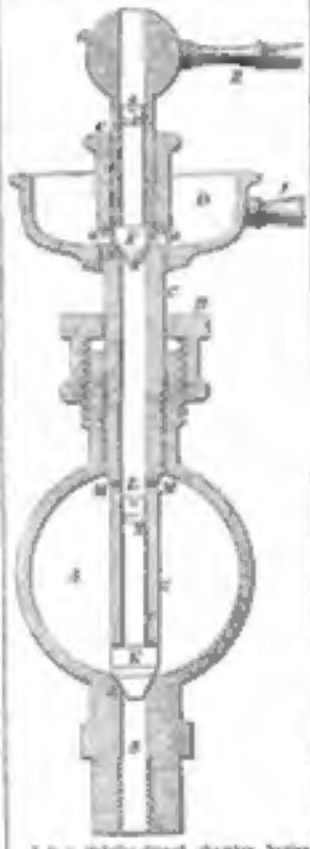
Who has not had a ride on a see-saw, eye, and who has not enjoyed it, too? Everybody of course, and will we remember in our swimming days how we always used to try and get some one heavier than ourselves to join us in the sport, because then we had a better ride. In these days we never inquired why, or wanted to know the cause, but even children are wiser now than they were then, and as we know that boys and girls still like a good ride on a see-saw, we will explain the reason why the lightest boy always has the biggest ride.

The see-saw is a plank laid across another, and is nothing but a lever, and when two boys of unequal weights intend to have a ride together, the plank has to be adjusted so that the lightest has the longest end, as most lucidly engraving. When they commence to move up and down, they each move in an arc of a circle, the plank forming the radius and the supporter the centre. The circles in which they move are drawn around them, and as the lightest boy has the longest radius, he describes an arc of a larger circle than the heavier one, and so has the best ride—that is, he goes through a greater space in the same time.

Cooke's Improved Lubricator.

The necessity of having some means whereby oil or other lubricating material can be introduced into steam cylinders, steam chests, and other places where the pressure inside is much greater than the external pressure, is very obvious; and it is also easy to conceive that some of the ordinary oil cups will answer, as should one of these be placed on the cylinder, the steam would blow all the oil out of the cup instead of allowing any to pass into the cylinder. In the early history of the steam engine it was common to force oil into such places by means of a common syringe, but this was uncertain, and besides wasted a great amount of oil, and now it is usual to employ an oil cup constructed specially for this purpose.

J. D. Cooke, of Norristown, Pa., has invented a lubricator which will allow this object, (and of which our engraving is a vertical section,) where several pints an will save the



A is a globular-shaped chamber, having the lower end cast or turned to tap into the lid of the steam chest, and provided with a hole, S, and the valve seat, F, to set at the mouth of this hole, and in line with the vertical stem, C C C. The upper end of A has a hole in it so as to receive the vertical stem, C, and it has a screw cut outside to receive the stuffing-box, D; by this box, B, the packing can be screwed tight on the branch of A, and screwed, C, as to make it steam and oil tight, the screw on C being cut as her fours, that when it is raised to open F, it will not cut out the packing. The cylindrical vessel, C, is hollow, being wide from the top to X (less than X to E, so that a seat is given to the valve, F; it has two holes, O H, just above X, opening into the oil cup, at bottom, G, through which oil can pass into the steam, and through two other oil holes, M N, into the globe, A. The valve, F, is kept in its place by a groove turned in its stem into which a wire pin is fitted at E, and at L it has a screw-driver notch cut in the top, so that it may be ground to its seat by a screw-driver reaching down when the screw, G, is removed. The valve, F, is attached to G in the same manner, having a side pin, P, and notch, Q; it also has a handle, H. The cap, D, is fitted to the stem, C, and has a handle, I.

The operation is as follows—When the whole is screwed into the lid of the steam chest as set out to look, and the gate flaps placed in the sealing-box, B, then close, I, by turning the handle, I, put on the steam, and open the valve, F, by turning the handle, H, pour the oil into the cup, D, it passes through the tube, O H, shut the air valve, F on to seat, and valve, F, and open the lower valve, E, the steam then fills the globe, and the oil enters the cylinder.

This is a very neat invention, and a patent was obtained for it March 24, 1857, by the inventor, who will give any further information as being addressed as above.

Improvement in the Mode of Sealing Bottles.

There have been several ingenious modes for more effectually securing the corks and stoppers of bottles; but one now before us is far more safe, and is of an extremely simple character. The only alteration required is in the bottle, the neck of which on the inside for about three-quarters of an inch from the mouth has to be made with an internal screw; and this, of course, has to be done at the time the bottles are manufactured. This plan would not prevent those who use large corks

of bottles from adopting them, as a small stock of plain and screwed corked might be kept, and even mixed together without any inconvenience. The cork that would fit the one would do for the other, and the improved screw neck bottles could be handled with greater rapidity, providing the cork were sufficiently good to resist the valve which is required to securely fix them. The advantages which this plan has over the old one are that the squeezers and mallet are dispensed with, and the certainty of the cork retaining its position when once fixed. As the screw is formed rather taper, the smallest cork being downwards, very little or half-a-turn given to the cork reduces the diameter of it, and causes a greater pressure on the neck of the bottle. As the cork enters, an external thread is formed upon it, fitting the internal thread of the neck, so that if the cork is good, a great amount of pressure would have to be exerted before it could be forced out. Another advantage in this arrangement is, that as wine is needed to secure the cork, as it must take a spiral direction before it can be withdrawn or forced out.

A patent for fencing screws in the necks of bottles has recently been taken out in the British Patent Office, by Mr. Simpson, of Belgrave, England. The means by which this is effected is by an instrument resembling like the tongs or shears used in forming the ordinary necks of bottles. To the ends of the jaws of these tongs are screwed two pieces of metal, which are shaped to form the interior of the neck of the bottle or vessel to be made. In the centre is fitted a rod, the lower end of which passes between the jaws of the clip. The lower end of this is made conical, and formed with a thread upon it. The upper end passes through the inner part of the spring clip, and terminates in a cross handle. The melted glass is placed in the neutral and to form the neck, and the jaws of the clip brought together to form the exterior, and press the glass into the thread of the screw. The metal screw is withdrawn by means of the cross handle at the top of the rod, when the glass vessel, having a screw or thread formed inside of the neck of the bottle.

For medicine bottles, where the cork has to be frequently removed and replaced, this invention appears to be of the utmost value. It is one of those simple appliances which must find favor with the public, as it will save much time, waste and trouble, at a very small cost above what is now paid. As it compresses the cork much more than the ordinary bottles, it will prevent much evaporation, and as in other manners supersede glass stoppers.

We translate the above from an English periodical, entitled the *Illustrated Inventor*.